



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

GROUP ART UNIT 2877 / PATENT EXAMINER T NGUYEN

IN RE APPLICATION OF:

MUKHERJI

SERIAL NO.: 09/819,871

FOR: PRECISION VIDEO GAUGING  
MACHINE FOR VERTICALLY  
ORIENTED WORKPIECES

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

Sir:

Please enter the following amendments and remarks into the file of the above-captioned application in response to the Office Action mailed May 7, 2003:

IN THE CLAIMS:

Please amend the claims as indicated in the "Marked-up Version of the Claims" submitted herewith, wherein material to be added is underlined and material to be deleted is in brackets.

Also submitted herewith is a "Clean Version of the Claims After the Amendments." These clean paragraphs should replace the original claims.

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## **REMARKS**

This amendment is in response to an Office Action mailed on May 7, 2003. By this amendment, claims 3 and 11 have been amended and no new claims have been added. Thus, claims 1-21 are pending in this application. Claim 1 has been allowed and claims 2 through 21 have been rejected for the reasons discussed below.

Reconsideration and reexamination of the application and pending claims 2 through 21 are respectfully requested.

In general, Applicant has endeavored to place claims 2 through 21 in the application in condition for allowance and, as amended, it is believed that claims 2 through 21 in the application are now in condition for allowance and allowance of same is respectfully requested.

## **CLAIMS**

The claims have been amended to more clearly claim the subject matter of the invention and to point out with greater specificity various features of the invention now explicitly claimed and recited in the claims due to the amendments herein as explained in more detail below. The amendments to the claims are clearly supported by the original specification and drawings, and therefore do not add new matter.

## **35 USC 112 REJECTIONS**

The Examiner rejected claims 3 and 11 under 35 USC 112, second paragraph, as being indefinite in failing to point out what is included or excluded by the claim language, i.e., in lines 3 and 4 of the subject claims the phrase, "said video based coordinate measuring system" is argued

not to be clear. The Examiner correctly notes that the Applicant means by this phrase the suggested phrase, "measuring the position of the video based on a coordinate measuring system."

Applicant thanks the Examiner for this clarifying language. Each of these claims has been amended to incorporate this suggested phrasing to specifically point out what structure is included and excluded by the claim language. As the subject claims are now amended, each is now clarified to overcome the Examiner's stated basis for his rejection of the claims. Due to the above amendments, the Examiner's 112 rejections are moot and withdrawal of the rejections is respectfully requested.

### **35 USC 103 REJECTIONS**

Claims 2 to 21 were rejected under 35 USC 103(a) as being unpatentable over U.S. Patent No. 6,518,996 to Polidor et al. ("Polidor"). The Examiner argues in pertinent part:

With respect to claims 2, 10 and 18 that

"Polidor does not disclose the carriage which can be moved vertically. However, it would have been obvious (sic) a design choice to modify Polidor's carriage to move vertically to adjust the sample easier. The modification involves only routine skill in the art."

(Office Action, p. 2). To the extent that the Examiner's rejections may be applied to the cited claims, as amended, they are respectfully traversed.

Independent claims 2 and 10, from which claim 18 depends, are directed to a precision video gauging machine system for measuring a workpiece having: a base; a carriage for supporting the workpiece to be measured that is vertically movable with respect to the base; a column, horizontally movable with respect to the base; and, a video based coordinate measuring

system mounted on the column. (Claim structural language common to both independent claims 2 and 10 and incorporated into dependent claim 18.)

Polidor is directed to a video inspection apparatus having a frame, a work support table mounted on its frame for reciprocable adjustment thereon horizontally in a Y direction, and a yoke member mounted on the frame for vertical adjustment thereon above the table in a Z direction which extends normal to the Y direction. An optical system carriage is further mounted on the yoke member for vertical adjustment therewith and for reciprocable adjustment relative thereto in an X direction that extends at right angles to each of the Y and Z directions. (Polidor claim 1)

Applicant's claims have a structure that is fundamentally distinct from that of Polidor for at least the following reasons outlined below and are therefore patentable thereover.

The Examiner is correct in noting that Polidor does not disclose a vertically moving carriage as is specifically taught and claimed by Applicant as an essential element of his invention. The specification on page 1, lines 7 et seq. states that the present invention "pertains to a precision video gauging machine for measuring relatively small or relatively lightweight workpieces that are *mounted for movement in a vertical relationship to a base element while an optical measuring system is being operated in a horizontal relationship to the base element.*" (Emphasis added)

In fact, it is this very construction of vertically mounting the workpiece and horizontally operating the optical measuring system that is being claimed by Applicant that enables Applicant's invention to overcome the problems of the prior art noted in Applicant's specification beginning on page 3, line 3 et seq. Namely, that a workpiece mounted on a horizontally movable inspection

table: requires a workpiece supporting table capable of not only supporting the weight of the workpiece but one that can allow for illumination of the workpiece through the table, thereby limiting the weight of the workpiece that can be measured. Next, stress points from uneven weight distribution in the supporting inspection table caused by the weight of the workpiece lying horizontally on the inspection table, cause inaccuracies in measurement by distorting the illuminating light passing through the supporting table. Further, the vertically disposed and movable gantry type structures used to hold and move the measuring probe or optical measuring system (such as in Polidor) limit the vertical size of the workpiece that can be measured, as large or deep workpiece configurations simply cannot fit under the gantry structure and therefore cannot be measured by the machine. Additionally, having to vertically focus the optical measuring system, as in Polidor, causes problems by limiting the focusing range of the optical measuring system to the extent of the vertical travel of the supporting gantry mechanism. This focusing problem is overcome in Applicant's invention by having a horizontally movable optical measuring system that can be moved over a greater horizontal range than Polidor's vertically limited range.

Polidor is specifically directed to an improvement in just such a prior art device having the problems noted above. Polidor attempts to solve these problems by adding to the existing structural configuration, while Applicant's invention as claimed radically changes the very structure itself and not merely adds additional elements to existing prior art structure. See, for example, as proof of this assertion, Polidor column 1, lines 6 et seq. where the horizontal positioning of the workpiece and the vertical positioning of the optical system carriage above the workpiece is clearly defined as being the structure upon which Polidor's invention provides an improvement. At column 1, line 32 et seq. Polidor states that "[a]mong the advantages of the

present invention over such prior art systems is the fact that *the measurement range in the vertical Z direction can be extended substantially*, while offering certain precision advantages.” (Emphasis added.) This is one of the problems Applicant noted as being overcome by Applicant’s claimed structure, i.e., Applicant’s structure allows for a larger or deeper workpiece configuration that could simply not fit under the gantry structure of Polidor. At no time in any of the specification, teachings, drawings or claims of Polidor is Applicant’s claimed structure of vertically mounting the workpiece and horizontally moving the video based coordinate measuring system disclosed, suggested, taught or even hinted. In fact, were Polidor’s structure to be modified with the hindsight of Applicant’s claimed structure, it would contradict Polidor’s plain specification and claim language that permeates the Polidor reference requiring that its video inspection apparatus be mounted above the inspection table and workpiece and move vertically thereabove while the inspection table and workpiece move horizontally therebelow. The bald, unsupported assertion that “it would have been an obvious design choice to modify Polidor’s carriage to move vertically,” involving “only routine skill in the art,” is just that, unsupportable in light of the clear language and claimed structural teachings of Polidor and directly contradictory to its plain stated language.

The lack of any existing prior art showing the structure being claimed by Applicant having a vertically movable inspection table supporting the workpiece to be measured with a horizontally movable video measuring system that overcomes existing limitations and problems in the art, is clear evidence that such arrangement is indeed non-obvious and novel and not merely an extension brought about by “only routine skill in the art.”

Accordingly, since the structures of Polidor and Applicant are mutually exclusive, i.e., a

horizontally movable inspection table versus a vertically movable inspection table, etc., the fact that the claimed structures are not interchangeable, and the further fact that Applicant's claimed structure provides a benefit and solves a problem found in the prior art in a novel and non-obvious manner, the claims, as amended, are patentable over Polidor.

Remaining claims 3-9, 11-21 are dependent on allowable claims 2 and 10, respectively. As a result, these dependent claims contain all of the limitations of the allowable base claims as shown above. These dependent claims are therefore allowable at least by virtue of their dependence on allowable base claims. In addition, these dependent claims are allowable for the totality of the features claimed therein, based on the new combinations formed with the added limitations.

## CONCLUSION

In view of the foregoing, it is respectfully submitted that all of the remaining claims 2-21 like allowed claim 1, also patentably distinguish over all of the art of record, taken singly or in any combination under 35 USC 102 as well as under 35 USC 103. Entry of the Amendment, withdrawal of the objections and rejections, allowance of claims 2-21, and the passing of the application to issue are respectfully solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is encouraged to telephone or email the undersigned at the telephone number or email address given below for prompt action.

If an extension of time is due in connection with the filing of this submission, such extension is hereby requested.

Respectfully submitted,

Dated: *June 23, 2003*

  
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**Marked-up Version of the Claims**

3. (Amended) A precision video gauging machine for measuring a workpiece as in claim  
2 further comprising:

means associated with said base for measuring the position of [said] the video based on a  
coordinate measuring system.

11. (Amended) A precision video gauging machine for measuring a workpiece as in claim  
10 further comprising:

means associated with said base for measuring the position of [said] the video based on a  
coordinate measuring system.

**Clean Version of the Claims After the Amendments**

3. A precision video gauging machine for measuring a workpiece as in claim 2 further comprising:

means associated with said base for measuring the position of the video based on a coordinate measuring system.

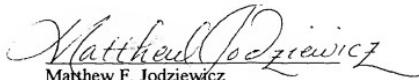
11. A precision video gauging machine for measuring a workpiece as in claim 10 further comprising:

means associated with said base for measuring the position of the video based on a coordinate measuring system.

**CERTIFICATE OF MAILING**

I hereby certify that this correspondence is, on the date shown below, being deposited with the U.S. Postal Service with sufficient postage as first class mail in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Dated: *June 23, 2003*



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